#3661
R

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

November 16, 2010

TO: Internal File

THRU: Ingrid Campbell, Lead

FROM: Priscilla Burton, Soil Scientist PWB by SES

RE: Catchment Structures C & E, West Ridge Resources, Inc., West Ridge Mine, C/007/0041, Task ID #3661

**SUMMARY:**

This amendment was provided to abate NOV 10063 issued 7/21/2010 for again exceeding UPDES limitations at outfall #2 and contributing to increased sediment/coal fines outside the permit area in the "C" Canyon drainage tributary to Grassy Trail Creek. This amendment describes the re-construction and interim reclamation of previously temporary catchment structures C and E (see Tasks 3309, 3543, 3602). There are three catchment structures authorized by BLM ROW 87110 (App. 5-15, Attachment 3) and by the Stream Alteration Permit (Attachment 4). The catchment structures are described in Appendix 5-15 to the Mining and Reclamation Plan. Addendum 9 describes ongoing use of these catchments over the life of the mine. A minor change to Map 2-1 and the reclamation plan are requested prior to approval.

**R645-301-121.100 and R645-301-200,** For structures C and E on Map 2-1, please verify the Soil Map units stated and cite the source. (Carbon County Soil Survey places Catchment C in Map Unit 36 and Catchment E in Map Unit 49.) Second, reference Map 1-1 for location of Catchment C & E which are not shown on Map 2-1.

**R645-301-231.300,** Repeated disturbance and replacement of the catchments may result in high accumulations of salts (see disturbed soil analysis vs. undisturbed in Attachment 13. Therefore, it is recommended that at FINAL reclamation of the mine, the reclaimed surface soils in the vicinity of the former catchments A, C and E be tested for pH, EC, and SAR to allow and evaluation of the salinity and the need for a revision or addition to the final seed mix to enhance germination and establishment.

**TECHNICAL ANALYSIS:**

# ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

## GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

**Analysis:**

Catchments C & E were constructed in the spring/summer of 2009 reclaimed in the fall of 2009 and will be redisturbed again with this construction. Limited information is available about the vegetation and soils of the riparian zone and stream channel bottom. Pre-construction photographs in Attachment 8 of Appendix 5-15 provide some information about the stream corridor, in compliance with R645-301-750.

Locations of catchments are shown on Map 1-1. The ephemeral channel runs through the Clark Valley and now carries a perennial stream of mine water discharge. The river distance between the catchment basins is unknown.

**Findings:**

The information provided meets the minimum requirements for baseline information.

# SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

**Analysis:**

Soils Map 2-1 shows the location of Catchment Structure A. Catchment Structures C and E are downstream and are not shown on Map 2-1. The Catchments C & E have been constructed in an ephemeral channel that runs through the Clark Valley and that now holds mine water flow year round. The catchments are shown on Map 1-0/1-1 Permit Location Map. App. 5-15, Attachment 11 provides an as-built drawing of the disturbance created by Catchments C and E, each affecting 0.23 acres (MRP, Chap 1, p. 1-7).

Catchment C soils are described as soil unit 36. Catchment E soils are described as soil unit 47. The source of the map unit for catchment C is not stated, and does not correspond with the 1988 Carbon County Soil Survey, which places the locations of Catchments as follows:

- Catchment E (T. 14 S., R. 12 E., Sec. 25) is shown on the General Soil Map in Map Unit 6 the very deep, well drained, nearly level to moderately steep Hernandez family-Mivida-Strych soils on alluvial fans and fan terraces and more specifically on Soil Map 21 in Map Unit 49, Haverdad Loam, alkali, 0 – 3% slopes.
- Catchment C (T. 14 S., R. 13 E., Sec 29 is shown on the General Soil Map in Map Unit 7, the shallow to very deep, well drained, nearly level to moderately steep soils of Strych-Gerst-Travessilla soils on outwash plains, benches, and mesas, and more specifically on Soil Map 22 in Map Unit 36, Gerst-Strych-Badland, complex, 3 to 50% slopes.

The Carbon County Soil Survey Soil analysis representing disturbed soil and undisturbed soil in the vicinity of Catchment C & E, as described on page 13 and 14 of Appendix 5-15, are presented in Attachment 13. The locations of the sampling are shown in Attachment 13 as well.

**Findings:**

**R645-301-121.100 and R645-301-200,** For structures C and E on Map 2-1, please verify the Soil Map units stated and cite the source. (Carbon County Soil Survey places Catchment C in Map Unit 36 and Catchment E in Map Unit 49.) Second, reference Map 1-1 for location of Catchment C & E which are not shown on Map 2-1.

# RECLAMATION PLAN

## GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

**Analysis:**

Appendix 5-15, pp. 5-8 describes reclamation of the catchment basins as per BLM requirements in the ROE document. DOGM visited the reclaimed catch basins in on June 9, 2010, see inspection report #2394. Two seed mixes for the regraded sites are provided in Attachment 13. Seed was hand broadcast and raked in.

Addendum 9 describes repeated interim reclamation of the re-constructed catchments to be completed as described on p. 5-8, after each use. The interim reclamation is the same in approach and seed as the final reclamation.

Repeated disturbance of the soil may result in high accumulations of salts (see disturbed soil analysis vs. undisturbed in Attachment 13. Therefore, it is recommended that at FINAL reclamation of the mine, the surface soils in the vicinity of the former catchments be tested for pH, EC, and SAR to evaluate the need for a revision or addition to the final seed mix to enhance germination and establishment.

**Findings:**

**R645-301-231.300,** Repeated disturbance and replacement of the catchments described in Addendum 9 may result in high accumulations of salts (see disturbed soil analysis vs. undisturbed in Attachment 13. Therefore, it is recommended that at FINAL reclamation of the mine, the reclaimed surface soils in the vicinity of the former catchments A, C and E be tested for pH, EC, and SAR to allow and evaluation of the salinity and the need for a revision or addition to the final seed mix to enhance germination and establishment.

**RECOMMENDATIONS:**

A minor change to Map 2-1 and the reclamation plan are requested prior to approval.

O:\007041.WR\WG3661\pwb3661.doc